March 16, 2015

Margie Brown
Director of Facilities
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8211 Lampson Avenue
Garden Grove, CA 92681

Via email: Mbrown@ggusd.us

Subject: Updated Summary of Limited Soil Testing at Mabel Carver Elementary School, Stanton, California

Dear Margie:

PlaceWorks is pleased to submit the analytical test results from the limited soil sampling and confirmation sampling that was implemented at Mable Carver Elementary School Site located at 11150 Santa Rosalia Street in Stanton, Orange County, California. The existing school site is undergoing modernization. Garden Grove Unified School District (District) requested PlaceWorks to collect soil samples in areas where students and staff may come into contact with soil.

BACKGROUND

Mable Carver Elementary School was constructed in the late 1950s and opened over 50 years ago in 1960. Limited soil testing was implemented to evaluate if the school site had potential environmental hazards related to historic land use in areas where students and staff may come into direct contact with the soil. There was a report of a natural gas leak in one area of the campus that was reported to have stained the soil a dark color. Soil samples were collected in the area of the reported natural gas leak and in other areas where children and staff may come into direct contact with soil. Sampling was also targeted for low lying areas where potential contamination may have accumulated due to runoff. Based on the analytical results a small area where pesticides were detected was removed and a confirmation soil sample was collected that showed that the removal was effective.

FIELD SAMPLING ACTIVITIES

On February 13, 2015, a PlaceWorks geologist met with Jason Thrift, facilities project manager at Garden Grove Unified School District. Mr. Thrift identified the area of the former natural gas leak and the low lying areas where students and staff would be the most likely to come into direct contact with soil. Soil sample locations are shown on Figure 1.

Four soil samples were collected using hand-sampling equipment from approximately 6 inches below ground surface. At each sample location the collected soil was placed into pre-cleaned laboratory sampling jar. Upon collection of the soil samples a label was placed on the sampling jar that included a unique sample number, sample location, and time/date of sample collection. The soil samples were then placed in an ice-cooled chest and submitted under documented chain-of-custody to Advanced Technology Laboratories (ATL) in Signal Hill, California. The submitted soil samples were analyzed for organochlorine pesticides (OCPs) by EPA Method 8081, lead by EPA Method 6010B and the soil sample collected in the area of the former natural gas leak was also analyzed for total petroleum hydrocarbons (TPH) by EPA Method 8015B.

ANALYTICAL RESULTS

Review of the laboratory test results found detectable concentrations of lead ranging from 17 milligrams per kilogram (mg/kg) to 49 mg/kg. The concentrations of lead are below Department of Toxic Substances Control (DTSC) screening level for school sites of 80 mg/kg for lead.

The following five organochlorine pesticides were found in soil at the site: DDE was reported in two samples, DDT was reported in two samples, chlordane was reported in two samples, heptachlor was reported in one sample, and heptachlor epoxide was reported in one sample. The following table compares the highest reported concentration reported at the site to the EPA Region IX Regional Screening Level for soil (RSL):

Chemical	**Highest Concentration Micrograms per kilogram (µg/kg)**	**Residential RSL Micrograms per kilogram (µg/kg)**	**Ratio Concentration/RSL**
DDE	19	1600	0.012
DDT	12	1900	0.006
Chlordane	1300	1800	0.722
Heptachlor	1.2	120	0.01
Heptachlor Epoxide	32	59	0.54
Total Risk			**1.29 x 10-6**

The estimated cancer risk for the site based on the four soil samples collected using the maximum detected concentrations assuming a residential land use exposure scenario is 1.29×10^{-6}, above the level of concern of one in a million increased cancer risk and within the EPA risk management range of $1x10^{-6}$ to 1×10^{-4}. The RSL is for a residential land use exposure which assumes that an individual would be exposed to the soil for 350 days per year for 24 hours per day and also assumes that a child would be at the site for 6 years and an adult for 26 years. Actual exposure at the school site would be significantly less.

Total petroleum hydrocarbons in the one sample collected from the area of the reported natural gas leak had a concentration of 97 mg/kg. The RSL for TPH is 2,500 mg/kg. The TPH is below levels of concern.

The laboratory reports and chain-of-custody is included as an attachment to this summary report.

SOIL REMOVAL AND CONFIRMATION SAMPLING

In the area of sample location B4 on the south side of the southernmost building on the school site, the District removed approximately 106 cubic yards of soil down to approximately 8 inches below the surface in a triangle shaped area that is approximately 124 long by 35 wide. PlaceWorks on March 10, 2015 collected one soil sample from the B4 sample location to confirm that the area where detectable concentrations of pesticides had been excavated.

The confirmation soil sample was analyzed for organochlorine pesticides by EPA Method 8015B. One pesticide 4,4'-DDE was reported at a very low concentration of 2.0 µg/kg. The residential RSL for DDE is

1,600 µg/kg. Chlordane which had been detected at 1,300 µg/kg was nondetect following the soil excavation. **Th**e laboratory report for the confirmation sample is included as an attachment.

DISCUSSION

Review of the analytical results found detectable concentrations of five pesticides in two of the soil samples, B3 and B4 during the sampling on February 13, 2015. The maximum reported concentration of each pesticide was below its respective residential screening level. However, the sum of the estimated carcinogenic risk slightly exceeds one in a million but is within the EPA risk management range of $1x10^{-6}$ to 1×10^{-4}.

The TPH concentration was significantly below the RSL for TPH. Lead concentrations in soil were also below DTSC's screening level for lead in soil for school sites.

Based on the pesticide results, approximately 106 cubic yards of soil were excavated from the B4 sampling area. Confirmation sampling shows that the excavation was effective.

If you have any questions regarding this report please contact us at 909.989.4449.

Respectfully submitted,

PLACEWORKS

Denise Clendening

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Attachments